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10/797,913	03/10/2004	Brad A. Medford	1033-LB1044	3342

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EXAMINER
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NGUYEN, ANH NGOC M

ART UNIT	PAPER NUMBER
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2473

MAIL DATE	DELIVERY MODE
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01/20/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/797,913	<b>Applicant(s)</b> MEDFORD, BRAD A.	
	<b>Examiner</b> Anh Ngoc Nguyen	<b>Art Unit</b> 2473	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment***

1. Applicants' Arguments/Remarks filed 10/02/2009 with respect to claims 1 – 8 and 15 – 17 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1, 5 – 8, 15 – 17 have been amended. Claims 1 – 8 and 15 – 17 are pending.

The amendments to claim 1 have overcome the 35 U.S.C. § 101 rejection and meet the requirement of a statutory process that is tied to another statutory category (such as a particular apparatus). Therefore, the rejections of claims 1 – 8 under 35 U.S.C. § 101 are withdrawn.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, 7, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levi et al. (US 7,376,144; hereinafter refer as Levi) in view of Davis et al. (5,459,600; hereinafter refer as Davis) and further in view of Edasawa et al. (US 6,831,981; hereinafter refer as Edasawa) and Lee et al. (US 2004/0264400; hereinafter refer as Lee).

Levi discloses protocol for native service transport over point to multipoint passive optical network comprising the following features:

Regarding claim 1, Levi discloses a method comprising: communicating an a combined Internet Protocol (IP) signal and an Asynchronous Transfer Mode (ATM) signal via an optical

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medium (see abstract, col. 1 lines 45 – 67, col. 2 lines 1 – 11, col. 3 lines 1 – 10 lines 50 - 60, Fig. 1, Fig. 2, IP 14 and ATM 16 within frame 1 are sent in a optical path).

Regarding claim 7, Levi discloses wherein the first ONT is at a first location and the second ONT is at a second location (see Fig. 1, Fig. 2, col. 1 lines 65 – 67 and col. 2 lines 1 – 12, a point to multipoint network...to multiple NT's).

Regarding claim 8, Levi discloses wherein the combined ATM/IP signal is communicated via a passive optical network (see Fig. 1, Fig. 2, col. 1 lines 65 – 67 and col. 2 lines 1 – 12, IP 14 and ATM 16 within frame 1 are sent in a optical path; see abstract, over a passive optical network).

Levi discloses the claimed limitation as stated above. However, Levi does not disclose the feature of phase modulation of two signals (ATM and IP).

Davis discloses using phase modulators to modulate signals (payload) wherein the signals may be of the same or different protocols (i.e. ATM, IP...etc...) (see abstract, col. 9 lines 7 - 15).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Levi, and use a phase modulator to modulate signals of the same or different protocol, as taught by Davis, in order to provide an optical telecommunication system with a reduced number of optical components for multiplexing various payloads on the same optical transmission path, as discussed by Davis (see col. 3 lines 9 - 14).

Regarding claim 1, the combination of Levi and Davis disclose wherein the ATM signal is phase modulated based on the IP signal to produce a combined ATM/IP signal (see Levi: Fig. 1, Fig. 2, shown are frames with IP 14 and ATM 16; see Davis: abstract, col. 9 lines 6 – 15, Fig. 2, Fig. 3, 26F and 26S are phase modulators for modulating signals).

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Regarding claim 5, the combination of Levi and Davis disclose further comprising forming the combined ATM/IP signal by modulating a phase of the ATM signal based on the IP signal (see Levi: Fig. 1, Fig. 2, shown are frames with both IP 14 and ATM 16 together; see Davis: abstract, col. 9 lines 6 – 15, Fig. 2, Fig. 3, 26F and 26S are phase modulators for modulating signals).

Regarding claim 15, Levi discloses an apparatus to communicate an Asynchronous Transfer Mode (ATM) signal and an Internet Protocol (IP) signal (see abstract, Fig. 1, Fig. 2, col. 1 lines 45 – 67, col. 2 lines 1 - 11, frame 1 with IP 14 and ATM 16 are sent downstream and upstream), the apparatus comprising: an optical line terminal (OLT) (see col. 1 lines 49 – 54, col. 5 lines 4 – 25 lines 55 - 60, LT – line termination).

Levi discloses the features of claim 15 as stated above and further shows an ATM and an IP signal with the same frame (Fig. 1, Fig. 2). Levi does not disclose a phase modulator.

Davis discloses using phase modulators to modulate signals (payload) wherein the signals may be of the same or different protocols (i.e. ATM, IP..etc..) (see abstract, col. 9 lines 7 - 15).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Levi, and use a phase modulator to modulate signals of the same or different protocol, as taught by Davis, in order to provide an optical telecommunication system with a reduced number of optical components for multiplexing various payloads on the same optical transmission path, as discussed by Davis (see col. 3 lines 9 - 14).

Regarding claim 15, the combination of Levi and Davis disclose the OLT (see Levi: abstract, col. 1 lines 49 – 54, LT-line termination in a passive optical network) comprising a phase modulator configured to phase modulate the ATM signal based on the IP signal to produce

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a combined ATM/IP signal (see Levi: Fig. 1, Fig. 2, shown are frames with both IP 14 and ATM 16 together; see Davis: abstract, col. 9 lines 6 – 15, Fig. 2, Fig. 3, 26F and 26S are phase modulators for modulating signals), the OLT further to output the combined ATM/IP signal (see Levi: Fig. 1, Fig. 2, where shown are frames with IP 14 and ATM 16 sent together downstream and upstream).

Levi shows in Figure 1 and Figure 2 a combined ATM/IP signal. Levi and Davis disclose the claimed limitations as stated above. Levi and Davis do not specifically disclose regarding claim 1, wherein the combined ATM/IP signal is transmitted to a first optical network termination (ONT) that does not include demodulator circuitry and a second ONT that does include demodulator circuitry; regarding claim 6, wherein the combined ATM/IP signal is transmitted via an ATM-based network comprising a G.983-based network; regarding claim 15, wherein the combined ATM/IP signal is transmitted to a first optical network termination (ONT) that does not include demodulator circuitry and a second ONT that does include demodulator circuitry.

Regarding claim 1, Edasawa and Lee disclose wherein the combined ATM/IP signal is transmitted to a first optical network termination (ONT) that does not include demodulator circuitry (see Edasawa: Fig. 16, ONUs 20\_1 to 20\_n with no demodulators...) and a second ONT that does include demodulator circuitry (see Lee: Fig. 2, Fig. 4, QAM demodulators 222, 223, para. 0020, 0030).

Regarding claim 6, Edasawa discloses wherein the combined ATM/IP signal is transmitted via an ATM-based network comprising a G.983-based network (see col. 1 lines 42 – 45, G.983 that is ITU-T recommendation is set up in the ATM-PON system).

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Regarding claim 15, Edasawa and Lee disclose wherein the combined ATM/IP signal is transmitted to a first optical network termination (ONT) that does not include demodulator circuitry (see Edasawa: Fig. 16, ONUs 20\_1 to 20\_n with no demodulators...) and a second ONT that does include demodulator circuitry (see Lee: Fig. 2, Fig. 4, QAM demodulators 222, 223, para. 0020, 0030).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Levi and Davis to include ONTs with and without a demodulator, in order to improve the efficiencies of unicasting, vendor broadcasting, group broadcasting, ciphering, and deciphering, as discussed by Edasawa (see col. 3 lines 60 - 63) and in order to use an ONT that can employ a low price optical receiver meeting relatively low quality specifications, as discussed by Lee (see para. 0018).

4. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levi et al. (US 7,376,144; hereinafter refer as Levi) in view of Davis et al. (5,459,600; hereinafter refer as Davis) and further in view of Edasawa et al. (US 6,831,981; hereinafter refer Edasawa) and Lee et al. (US 2004/0264400; hereinafter refer as Lee) and Aliahmad et al. (US 6,479,978; hereinafter refer as Aliahmad).

Levi and Davis disclose the ATM signal is phase modulated based on the IP signal as stated in paragraph 3 above.

Regarding claim 2, Aliahmad discloses wherein the ATM signal is phase modulated based on the IP signal without exceeding a specified tolerance of symbol period of the ATM signal (see col. 1 lines 40 - 56, to ensure that the phase difference between signals 106 and 107 is within acceptable tolerances of the expected phase shift from phase modulator 102...).

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Regarding claim 16, Aliahmad discloses wherein the phase modulator is further configured to phase modulate the ATM signal based on the IP signal without exceeding a specified tolerance of symbol period of the ATM signal (see col. 1 lines 40 - 56, to ensure that the phase difference between signals 106 and 107 is within acceptable tolerances of the expected phase shift from phase modulator 102...).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Levi, Davis, Edasawa and Lee, and have the features, as taught by Aliahmad, in order to provide precise timing measurement, as discussed by Aliahmad (see col. 1 lines 12 - 15).

5. Claims 3, 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levi et al. (US 7,376,144; hereinafter refer as Levi) in view of Davis et al. (5,459,600; hereinafter refer as Davis) and further in view of Edasawa et al. (US 6,831,981; hereinafter refer Edasawa), Lee et al. (US 2004/0264400; hereinafter refer as Lee) and Beidas et al (6,608,874; hereinafter refer as Beidas).

Levi and Davis disclose the phase modulation of IP and ATM signals but do not specifically disclose the phase modulation of multiple bits as stated below.

Levi, Davis, Edasawa and Lee disclose the claimed limitations as stated in paragraph 3 above. Levi, Davis, Edasawa and Lee do not disclose the following features: regarding claim 3, wherein the phase modulating encodes multiple bits of the IP signal per pulse in the ATM signal; regarding claim 4, wherein the phase modulating encodes two bits of the IP signal per pulse in the ATM signal; regarding claim 17, wherein the phase modulator is further configured to encode multiple bits of the IP signal per pulse in the ATM signal.



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Beidas discloses method and apparatus for quadrature multi pulse modulation of data for spectrally efficient communication comprising the following features:

Regarding claim 3, Beidas discloses wherein the phase modulating encodes multiple bits of the IP signal per pulse in the ATM signal (see col. 1 lines 34 – 67, communicating two bits of information on each quadrature component of a carrier signal during a single signaling interval).

Regarding claim 4, Beidas discloses wherein the phase modulating encodes two bits of the IP signal per pulse in the ATM signal (see col. 1 lines 34 – 67, communicating two bits of information on each quadrature component of a carrier signal during a single signaling interval).

Regarding claim 17, Beidas discloses wherein the phase modulator is further configured to encode multiple bits of the IP signal per pulse in the ATM signal (see col. 1 lines 34 – 67, communicating two bits of information on each quadrature component of a carrier signal during a single signaling interval).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Levi, Davis, Edasawa and Lee, and have the features, as taught by Beidas, in order to minimize as possible as possible the power required for data transmission for cost and energy conservation, as discussed by Beidas (see col. 2 lines 26 - 30).

### ***Conclusion***

Examiner's Note: Examiner has cited particular paragraphs, columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is

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respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and, also to verify and ascertain the metes and bounds of the Claimed invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ngoc Nguyen whose telephone number is (571) 270-5139. The examiner can normally be reached on M - F, 7AM to 3PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 5712723182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anh Ngoc Nguyen/  
Examiner, Art Unit 2473  
01/15/2010

/KWANG B. YAO/

Supervisory Patent Examiner, Art Unit 2473